

AID/TA/SA
PM-AAC-389

LAND REFORM

LAND SETTLEMENT AND COOPERATIVES

1975 - No. 1

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

ARTICLES

LAND REFORM AND DEVELOPMENT PART I: THE MODEL TESTED BY SCALOCRAMME ANALYSIS

by

Harold E. Voelkner and Jerome T. French *

I. INTRODUCTION

The purposes of this study are two-fold: first, to examine previously developed hypotheses about the relationship of land reform to general development ^{1/}, and second, to further test the potential of an analytic technique known as Guttman Scaling (see Annex A) as a mechanism for interrelating quantitative and qualitative data on social, political and economic development to obtain a better overall perspective on a given country's level of development and a clearer picture of the relative impact of various factors in each of these three development categories at various stages in the development process.

Our basic thesis is that land reforms are part of two complex development processes, the traditional and the modern, which are in turn linked by a series of transitional phases. We believe that land reform can best be understood by examining its role within these two processes rather than viewing it as an isolated, unique event. We further believe that these processes are more universal than generally recognized and that certain common historical stages can be identified and systematically compared across different nations.

In this paper we use the term land reform to signify any significant alterations in the terms of cultivator access to land, usually a change in land tenure. However, we agree with the United Nations definition that "the ideal land reform programme is an integrated programme of measures designed to eliminate obstacles to economic and social development arising out of defects in the agrarian structure" (1, vi). Such a reform programme would include land reform as we have defined it, as well as associated alterations in the terms of cultivator access to the inputs needed to increase and broaden agricultural productivity and rural incomes, and might more properly be referred to as an agrarian reform. We have attempted to use the two terms consistently in this paper to distinguish between their broader and narrow aspects, as seems most appropriate in each instance.

* Mr. H.E. Voelkner is Integrated Rural Development Officer, FAO, Rome; Mr. J.T. French is Operations Officer, Development Administration Section, Agency for International Development, Washington, D.C.

^{1/} These hypotheses were originally stated in "A dynamic model for land reform analysis and public policy formulation". Agency for International Development, Washington, D.C. Spring Review of Land Reform, Background Paper 7, June 1970.

II. SUMMARY OF FINDINGS AND CONCLUSIONS

The results of our analysis as interpreted in the context of our theoretical premise can be summarized as follows:

1. Land reform or the lack of it, constitutes a significant part of the development process. Its significance is not limited to the agrarian sector but closely interrelates with the overall development of a country both before and during modernization. Its effects are felt in the general economic, social and political spheres, both directly and indirectly as these three aspects of development interact.

2. Land tenure patterns and associated forms of land usage play a key role in determining the form and degree of social stratification and the concentration or dispersion of political and economic power within a given country. Feudalized land tenure ^{2/} is invariably associated with highly stratified, rigid, hierarchical societies which are typical of highly developed traditional societies. Prefeudal or defeudalized agricultural tenure systems are associated with more open, mobile, flexible and egalitarian primitive or modern societies. The degree to which either of these two basic tenure patterns and their associated societal characteristics predominate depends on the level of traditional development or the stage of transition from traditional to modern of the country concerned.

3. In the broad historical sense, alterations in land tenure patterns, i.e. land reforms, move in one of two directions: feudalization or defeudalization of tenure. These movements, caused principally by the interaction of population pressure and technology, have a profound affect on the basic character of the society.

4. Land tenure changes, whether involving a further feudalization or defeudalization of tenure, are an integral part of the transitional process from that situation generally identified in development literature as "traditional" to that situation generally identified as "modern". The rate of change is frequently dependent on or accelerated by the extent plus form of external pressures on the local society.

5. Most countries actually experience two development processes: the traditional development process and the modern development process. They are at some stage in the traditional process when starting the modernization process. For a period of time both processes, i.e. the forces generating both processes, overlap. A common consequence for land tenure patterns is a rapid increase in displacement or collectivization of remaining free or semi-freeholding operators. This may occur under a capitalistic system in which merchants or other middle class groups gain control over land through control and exploitation of commercial forces, or it may occur under socialist systems which collectivize areas with freeholding cultivators.

^{2/} The term 'feudal' is used here in the abstract societal, structural sense. Feudal structures and conditions can be identified in general economic and socio-political structures around the world. We believe that variations in structures and conditions are more a part of different stages of feudalism than they are of specific cultures or ethnic groups. Feudal structure contains primarily two classes, the peasant and the lord. Historically, feudal structure developed from the forces generated by the need of society to control its major resources, land and cultivators, and the distribution of their products among a growing population of peasants and the growing needs of a ruling elite of lords. Such functional feudalism continues to exist in varying forms and degrees in "modern" as well as "traditional" societies. Thus the relationship between a modern landlord - be he a merchant, a public employee or the state itself - and the cultivator tenant is neo-feudal. The "peasant" is still exploited and his decision making power is curtailed.

6. As the transitional process from traditional to modern development proceeds, commercial development in the urban sector and increased technological, economic, and political penetration of the rural sector creates pressures for land reforms aimed at defeudalization of agricultural holdings. These pressures are catalyzed by alterations in landlord-cultivator relationships which are both economic and social in nature.

7. Land reforms resulting from these pressures tend to occur either at a relatively early stage in the transitional process, hence low overall national levels of modernization (socio-political and economic-technological), or at a relatively late stage of the transitional process, hence relatively high overall national levels of modernization. The timing, effects and the effectiveness of these land reforms tend to differ depending on other factors operative within the society in which they occur. The most significant factor is the level of feudal structural development at the beginning of modernization. Countries at early stages of feudalization and low levels of modernization may have an early land reform which causes reversion to the traditional freehold system, as happened in Bolivia and Mexico. However, in most late developing countries defeudalizing reforms appear likely only at a late stage of the modernization process unless war or another outside factor of equal catalytic force intervenes.

8. The effectiveness of land reforms aimed at ameliorating feudal or neo-feudal tenure patterns can be evaluated on the basis of (a) the extent to which exploitation of the cultivator and limitations on his freedom are reduced, and (b) the extent to which further economic and technological change and development are accelerated.

9. Defeudalizing reforms occurring at an early stage of the development process, if carried through, are likely to be more effective at reducing exploitation than at promoting technological and economic development. Reforms occurring at later stages are more likely to be both a consequence of technological and economic development and conducive to further technological and economic development.

10. Limited or attenuated agrarian reforms are most likely to occur at intermediate stages of the transitional development process. They involve mostly tenancy reforms and relief of iniquitous peasant obligations to permit some commercialization of agricultural production.

11. Significant reforms which include major land redistributions to tenants and landless labourers are most likely to occur at the end of the transitional stage and may be virtually a prerequisite to modernity. Our General Development Scale (see Scale I) reflects a strong coincidence between levels of overall national development and the degree of land reform which has occurred.

12. The coincidence of capacity to accomplish and dependency on land reform for further progress at upper levels of the transitional development process suggests that this is the most likely point at which reforms will occur in most less developed countries (LDCs). The 50 percent non-agricultural population point seems to be the most significant single indicator of a country's arrival at this stage.

13. When evaluating the land reform needs and feasibilities of a particular country, the analysis must include the recognition of (a) the stage of the country's development in the traditional development process when modernization began, and therefore how much feudalistic structure existed, and (b) the extent and form of the modernization which has occurred, and hence the degree to which feudalistic structures have been removed or modified. Perhaps they may even have been strengthened as a result of an increasing power of the two basic forces on limited land productivity - the growing number of peasants and the growing needs of the elite. The structural alterations that a land reform may be aiming to accomplish

in a society can only be achieved if the existing structure and the forces which created it are clearly recognized - for it is these evolutionary forces which must be overcome before actual structural alteration, as intended, is feasible.

14. In some countries the prospects for equity oriented land distribution and associated reforms may be diminishing due to severe population pressures. Land reforms which introduce "neo-feudal" relationships through collectivization as a means of maximizing employment on the land and centralizing control over product distribution are becoming more likely in these cases.

III. THEORETICAL PREMISE: THE LAND REFORM PROCESS MODEL

Figures A and B represent an attempt to illustrate how internal and external factors interact dynamically to bring about land reform, and how land reforms emerge and occur over a broad historical time frame as part of the development process of a society.

Our hypothesis is that land reforms occur when a series of mutually interactive catalytic change factors overcome constraining factors and produce an altered land tenure structure. These catalytic factors are initially primarily technological and result in changes which make the existing land tenure patterns and associated societal characteristics increasingly unviable. Since such changes usually occur gradually over extended periods of time, their effects are hard to isolate and measure. Similarly, the land reforms which they effectuate often occur slowly and regionally within countries, and the passage from one phase to another may be so gradual as to be fully discernable for a country as a whole only in historical retrospect. Eventually, the dominant mode which characterizes each phase is succeeded by a new dominant mode even though both the old and the new structure may have co-existed for some time in a particular country, and may continue to do so.

The phases of land reform set forth in Figure B were drawn from the Japanese experience. Japan's overall experience is historically similar to other advanced countries but has greater relevance to today's developing countries because of greater similarities of situation, nationally and internationally during the transitional development period. Because of the high population density in many currently developing countries, we believe that to modernize the bulk of their agricultural sector they will be forced either to undertake small farm owner-operator reforms along the Japan model, or to collectivize.

The modernization experience of other developed nations, especially the United States, is less useful as a guide for these countries due to the significantly different domestic and international conditions under which they are modernizing. In addition to profound differences in societal characteristics, today's agriculturally modernizing countries have (a) no room for territorial expansion, (b) no technological advantage over competitors, (c) much higher rates of population growth, (d) a less differentiated economy with a far greater proportion of the population still in the agricultural sector. (2)

IV. TESTING THE PREMISE

A. Data Collection

As in all development analysis efforts data availability was a serious problem for us. The data constraint was further complicated by our focus on land reform. There is a paucity of published quantitative data related to this topic, and that which does exist is likely to be either quite inaccurate, out of date, or non-comparable on a country-to-country basis. Our interest in social and political development, for which there are a few statistical indicators, further complicated the work.

We initially extracted as much information as we could from the country case studies prepared for the 1970 AID Spring Review of Land Reform (see Table 1). This sample contains 27 countries from virtually every geographic region and includes countries with centrally planned economies as well as with market oriented economies. With the exception of Nigeria, all countries have at least once been engaged in a land reform of one sort or another and apart from Nigeria and Kenya, all countries in the sample have had substantial feudal agrarian structures. Brazil was disaggregated to cover Northeast Brazil separately because of the significant differences between this part and other parts of the country. It would have been desirable to have done the same for India and Pakistan but we lacked adequate data sources.

Table 1. Countries included in this study 1/

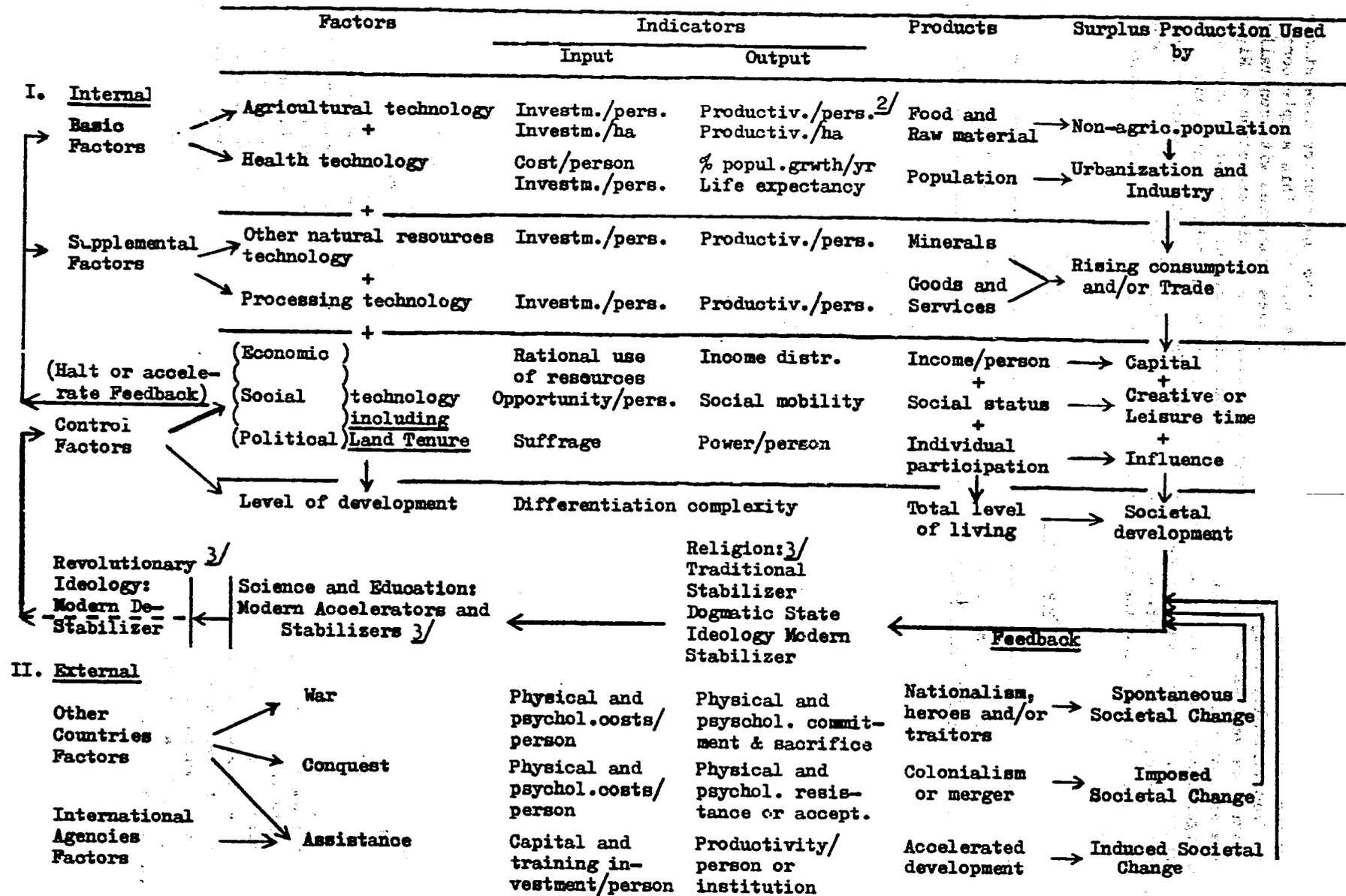
| No. | Country | No. of missing data out of 64 variables | No. | Country | No. of missing data out of 64 variables |
|-----|-------------|--|-----|-------------|--|
| 1 | Nigeria | 15 | 15 | Chile | 2 |
| 2 | Kenya | 13 | 16 | *Iran | 2 |
| 3 | Ecuador | 3 | 17 | Bolivia | 13 |
| 4 | Brazil | 9 | 18 | *S.Vietnam | 13 |
| 5 | Guatemala | 4 | 19 | Venezuela | 2 |
| 6 | *Iraq | 11 | 20 | *Turkey | 5 |
| 7 | Peru | 9 | 21 | *Mexico | 1 |
| 8 | *Colombia | 0 | 22 | Egypt | 7 |
| 9 | Algeria | 20 | 23 | *Taiwan | 6 |
| 10 | Tunisia | 3 | 24 | Hungary | 18 |
| 11 | India | 9 | 25 | *Yugoslavia | 11 |
| 12 | *Pakistan | 0 | 26 | *S.Korea | 3 |
| 13 | Philippines | 3 | 27 | *Japan | 8 |
| 14 | Cuba | 30 | | | |

* Countries for which land tenure data were published by FAO (6 & 7)

1/ The country case studies and related papers are available from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151, U.S.A.

We had previously developed a set of 105 social, political and economic indicators, from which a smaller scale had been constructed using qualitative data extracted from the various country case studies. In our efforts to pick up additional data we were able to find further quantitative data on social and economic development in publications of the United Nations and the World Bank; however, this still left a number of gaps. In order to fill them we conducted interviews with country experts and were fortunate in securing the cooperation of the State Department, Bureau of Intelligence and Research whose country specialists agreed to complete questionnaires covering areas in which we lacked specific information from other sources. The data from the country expert interviews was then integrated with the data from the land reform country studies and the United Nations and IBRD statistical data to produce a total of 93 indicators, of which 85 scaled to produce our General Development and Agrarian Reform Scale. The indicators for the General Scale were divided into two sub-scales to test for differences in technological-economic vs. socio-political development. Scale II contains 49 technological and economic development indicators, and Scale III contains 43 socio-political indicators. (The Scales appear at the end of this article).

Figure A. Dynamic ^{1/} agrarian reform model of factors affecting land tenure structure



Footnotes on page 7

B. Scale Construction

The procedure for constructing Guttman scales is described in Annex A. The purpose of the scale is three-fold. First, it is a means of differentiating and ranking countries according to levels of development. This is done by selecting development indicators and expressing them so that binary answers are possible. On our scale the presence or absence of each indicator is represented for each country on the scale by a 1 signifying that it is predominantly present, or an 0 signifying that it is predominantly absent in each country. Significantly, both quantitative and qualitative data can be treated in this fashion and data from a variety of development categories can be inter-mixed.

Secondly, the scale gives an indication of the sequence in which various attributes of development, as represented by the indicators, tend to occur within the overall development process. This sequence is illustrated by the scale-line which is the "stair-stop" line running diagonally across the scale. This scale-line identifies a "ladder of development" and indicates a cause and effect dependence of the attributes represented. The scales presented are not final. Some of the attributes may be less important than others; they may be alternatives of others or they may be interdependent with other attributes not included in the scale. The relevance of specific scale items can only be improved by adding and subtracting indicators as the analysis and its purpose dictates. Considerable further refinement of the scale is possible as the knowledge and data base improve.

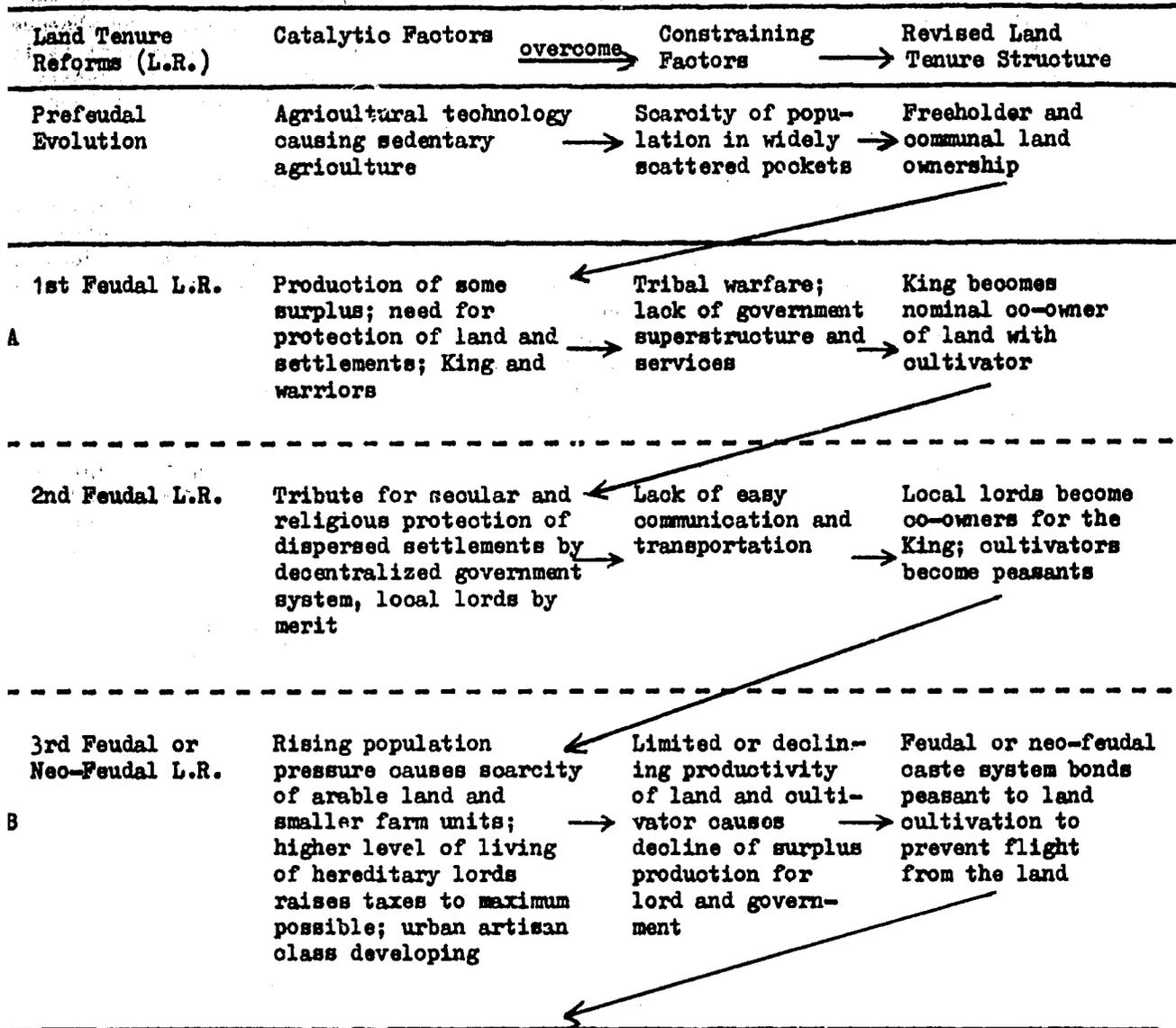
The development process, while sequential, does not occur rigidly step by step. It takes place within a range above and below the scale line. The items of deviation are illustrated by "zeros" below the scale line and "ones" above it. The deviations below the scale line identify "lags" and those above it identify "leads". They generally have significance when occurring within a 60 percent range of the scale line.

Thirdly, and as a consequence of the first two, the scale facilitates the integration and concurrent analysis of social-political and economic-technological factors in terms of their interrelationship within the overall development process.

Explanatory Notes to Figure A:

- 1/ Dynamics: A change in any one factor causes, or is dependent on changes in any one or more other factors, resulting in a spirally upward or downward trend in the total level of living (see Figure B). The total level of living includes social and political as well as economic aspects. Any one factor or combination of several may at any time act as a constraint or a catalyst in the development process. Land reform is usually possible only if land tenure acts as a constraint on development. It may, however, be only one of a group of constraints which must all be removed before land reform can become effective. Most often these co-constraints are within the political, agricultural and processing technologies. Land reform may also be used as a catalyst if forces develop which can bring it about ahead of its time. Usually such forces have come from outside the system.
- 2/ The popular man-land ratio is of little use in this context; only a man-land productivity index could identify the active factor over time, taking sedentary subsistence technology as a base. No such index seems to have been constructed.
- 3/ Stability of evolutionary development, not stagnation, is meant here.

Figure B. Sequential characterization of historical relationship between land reforms and the broader development process 1/



1/ This process is not deterministic. It can, and has been, altered by the entrance of catalytic modernizing forces. For example: (1) modernization entering the pre-feudal phase may cause a country to skip the feudal phase (African countries), (2) modernization entering at the first or second feudal phase may reverse the process by eliminating feudal structures and creating a prefeudal type freeholder subsistence agriculture (Bolivia, Thailand, Laos, etc.), (3) ideologically extremist policies entering during the transitional phase may reverse the process back to the third feudal phase with exploitation and virtual bondage of the small cultivator to the land (Spain, Brazil and some other Latin American countries), as well as some socialist countries.

Figure B continues..

Figure B. continued..

| Land Tenure Reforms (L.R.) | Catalytic Factors | overcomes → | Constraining Factors | → | Revised Land Tenure Structure |
|----------------------------|--|-------------|---|---|--|
| C 1st Transitional L.R. | External threat from modern states; internal desire to modernize; require new system to produce surpluses by modern technology; improved health technol. causes population pressure to become critical | → | Feudal or neo-feudal social structure; low levels of modern public and private institutions; lack of modern production inputs, know-how, and incentives | → | Change from feudal to unconditional commercial land ownership and production dependent on input and output institutions |
| D 2nd Transitional L.R. | Falling rate of production increase; rising organized tenant rebellion; rising concern and power of non-agricul. population; population growth rapid | ← | Unprotected small owner and tenant exploited by uncontrolled free market forces; rapid rise of neo-feudal tenancy and absolute parasitic landlord | → | Change from neo-feudal to contractual and protected tenancy or farm labour, absentee land ownership controlled or centralized |
| E 3rd Transitional L.R. | Food i.e. land most critical problem of large non-agric. population. Landlord elite loss of majority power, industrial society values gain upper hand | ← | Conservative neo-feudal values in rural society affecting whole country and/or government | → | Abolition of neo-feudal tenancy and social structure and absentee land ownership; individual or central land ownership limited in amount or control |
| F 1st Modern L.R. | Lagging levels of living of agric. population lagging growth of labour productivity because of farm size economies of scale; food and land surplus; part-time farming uneconomical | ← | Legal farm size limitations; part-time farming artificially perpetuated by prohibition of absentee land ownership | → | Removal of limitations on owner-farm size; communal or control; growing farm size to equalize levels of living between agric. and non-agric. population; rapidly declining agric. population |
| G 2nd Modern L.R. | Living standards require high labour productivity through automation; capital investment very high; public needs of protection from over and under production | ← | Individual ownerships unable to finance required mechanisation nor carry responsibility to public | → | Agriculture a modern industry in large corporate automated farms; production quotas and public utility status required. Agric. popul. & social system differences have disappeared |

The patterning and self-ordering of both types of indicators when technological-economic indicators are merged with socio-political indicators are, in our opinion, evidence of the overall development process in which various technological, economic, social and political factors interact. The degree of interrelationship indicated in the scaling process suggests strongly that developments in one sphere of development and their impact both within and without that sphere is dependent on developments in other spheres.

Correlations between different spheres of development have generally been recognized by development specialists but they have not been subjected to systematic measurement and analysis and therefore have seldom been an explicit factor in development planning. We believe the scale offers systematic evidence of the existence and pattern of such interaction and a useful means for collecting and analyzing data to facilitate integrated social and economic development planning and development assistance.

Despite the general acceptance that technological-economic and socio-political development are interrelated, past practice in general has been to formulate development plans and programmes as if they were mutually exclusive and to essentially limit consideration to one set of factors or the other depending on the background and personal proclivities of the persons involved. Past experience has shown that this approach is unsatisfactory and can be self-defeating due to unforeseen consequences of over-concentration or ill-timed concentration of efforts in one sphere or another. We believe the scaling process offers a methodology by which it may be possible to consider various aspects of development in a common analytic framework to get a clearer picture of constraints, trends, dominating influences, and stress points at different stages in the overall development process.

C. The Phases of Land Reform as Identified and Reflected in the General Development and Agrarian Reform Scale

We have attempted to relate the Figure B model to each of the countries in our sample by tentatively identifying where each land reform phase begins and ends in the left hand margin of the General Development and Agrarian Reform Scale. We do not insist that each country will necessarily experience each of these phases ^{4/}. Nevertheless, we find that virtually every late developing country in Asia and Latin America has experienced a feudal consolidation reform, and many are in the process of moving into or out of transitional reform situations which bear a close resemblance to those identified. Thus we believe the phases we have identified represent a good starting point for comparative historical analysis.

In some instances we are unsure where a particular indicator rightly belongs in relation to the phases identified. We strongly suspect that some might have appeared at a different point on the scale had a greater number of indicators and more accurate data been available. Such instances are indicated by two capital letters to the left of the indicator numbers in the left hand margin of the scale to suggest that that particular indicator may relate to either of the phases identified by the capital letters.

The prefeudal and feudal land reform phases are reflected by the first 22 indicators on the General Development and Agrarian Reform Scale. These indicators are almost universally present in all countries with the exception of Nigeria and Kenya.

The first transitional phase is rather poorly identified on the scales since we used only a few indicators pertaining to it, and is further limited by the sample of countries. It is, as the indicators suggest, a phase in which recognition occurs at the

^{4/} See explanatory note to Figure B (page 8)

national level of the existence of conditions in the rural sector which make land reform necessary and desirable. This recognition usually results in a declaration of national policy intent which becomes a subject of much debate. Positive steps toward reform are usually countervailed by conservative influences, unless a revolutionary situation arises. Virtually all countries in the sample have reached or passed through this phase.

Greater differentiation among countries begins to emerge in the second transitional land reform phase which is roughly marked by the beginnings of significant technological-economic and social-political penetration of the rural areas.

Our country rankings at this point are extremely tenuous since precise and reliable data on the extent of rural penetration in countries at this development level is limited ^{5/}. This phase is characterized by a period of rapid population growth in which agricultural production becomes increasingly dependent on technification and increase in output per unit of land replaces increase in the amount of land under production as the major means of increasing agricultural output. During this period traditional feudal relationships between "lord and peasant" are increasingly eroded and the gap in development levels between the urban and rural areas increases dramatically. The cumulative and interactive effects of these factors, which strongly influence the likelihood and feasibility of land reform, are:

- (a) a decline in the relative power and authority of traditional elites;
- (b) a rise in the relative power and authority of urban elites who have no vested interest in maintenance of traditional rural societal relationships and who are preoccupied with overcoming obstacles to national development and modernization;
- (c) chronic basic food shortages giving rise to emphasis on new ways to increase output;
- (d) emergence of "progressive" farmers in the form of modernizing landlords who disassociate themselves from traditional paternalistic feudal relationships and enterprising peasants who manage to establish their autonomy from traditional rural elites through application of modern technology.

These effects create increasingly intense pressure for reforms aimed at destroying the feudal land tenure structure and its associated societal forms. However, the timing and form of reforms occurring as a result of these pressures seem to be heavily dependent on the rate and sequence in which the developments themselves emerge and attain nationwide significance. This, in turn, is influenced by both domestic and foreign government economic and foreign policies.

There are severe environmental constraints, particularly during the initial stages of the second transitional period, which make effective implementation of reform policies during this period quite difficult despite the mounting pressures for them. These constraints are inherent in the balance of political power within the country which carries over from the preceding period. Traditional landlords are still very powerful, and it is extremely difficult for modernizing national elites to move against them. Moreover, adequate inducements to do so have not yet developed. Thus, as was determined by the analysis of results of land reforms at the Spring Review country studies, central government land reform policies are far more likely to exist in form than in substance during this phase (3).

^{5/} Data available tend to be in the form of national aggregates

Exceptions are those situations in which a strong outside catalyst, usually a war, intervenes. Wars are clearly the strongest catalyst to extensive land reforms during the modern development process, particularly for losers, because they discredit, weaken or even eliminate traditional power elites. Both the Mexican and Bolivian land reforms were a consequence of wars, as were earliest Central and North European reforms, the post-second world war East European, Japanese, and Korean reforms, and the Taiwan and Vietnam reforms.

Most recently the South Vietnamese experience has illustrated the many ways in which war has acted as a catalyzer. While in other countries many of the critical alterations in environmental conditions which helped induce land reform occurred over several generations, in South Vietnam they have taken only the last twenty years to mature. For example: (a) national penetration of the rural areas and breakdown of traditional landlord-peasant ties; (b) internal basic food shortages in what was previously a rice surplus country; (c) the locus of political power has shifted to non-landed urban based elites; and (d) the rural excess population has been removed to the extent that in 1970 the distribution reached approximately 50-50 rural/urban.

We are not arguing for a replication of the Vietnam experience; simply noting what its effect has been on conditions germane to land reform policies. It would appear that the general development process in other LDCs will eventually produce the same results without war, even though the rate and sequence of occurrence may be different.

The third transitional phase as identified on the scale is essentially a reflection of what appears to be the inevitability of agrarian reform (including land reform) as a natural consequence of the development process. As the overall modernization level of a country increases social, political and economic pressure for reform and an increased governmental and societal capability to bring about reforms converge and coalesce. During this phase the previously dominant policy question of whether to carry out reforms is eclipsed by the more urgent questions of when and what form they will take.

The most significant factor working to induce land reform during this phase is the accelerated economic and technological growth occurring within the country. The further economic and technological growth and diffusion proceeds, the stronger pressures for land related social and political change become. The increasing gap between technological-economic development and the socio-political development causes increased income disparities between various elements of the society and confusion and uncertainty concerning past roles and responsibilities, leading to increased tension and conflict.^{6/} As a consequence, the rate of technological-economic development is increasingly slowed and may even be temporarily reversed by societal conflict. Societal dualism reaches its peak during this period. The ultimate effect favours land reform as (a) the preponderance of political power and control over national agricultural policies passes to non-agricultural elites, (b) the breakdown of traditional societal norms and structural controls both permits and induces politically motivated mobilization of the rural masses, and (c) excess population moves out of the rural areas, drawn by the perception of greater opportunities in the urban sector thus reducing competition for access to available land.

Historically, rural-urban migration has been conducive to both tenancy reform and land redistributions favouring smallholders. However, under current conditions of extreme rural and urban over-population in some parts of the developing world, e.g., the Indian sub-continent, this phase of reform may have to be by-passed to reach agricultural industrialization via some form of collectivization.

^{6/} See, for example, Zagoria, D. "The Ecology of Peasant Communism in India", American Political Science Review (Menasha, Wisc.), March 1971, in which he compares ecological data, particularly population densities, land tenure patterns and related societal characteristics, with voting data as a means of explaining the sources of peasant radicalism and intra-societal strife in rural parts of Asia.

D. Interrelation of Technological-Economic and Socio-Political Factors

Since the General Development and Agrarian Reform Scale combines the four major sectors of development, we felt it valuable to test whether significant differences in scaling and analysis would occur by dividing the scale into two sub-scales - the Technological-Economic (Scale II) and the Socio-Political (Scale III).

Of the three scales, the technological-economic sub-scale has the least plateaus and the most orderly progression. The progression of the socio-political sub-scale is interrupted (long plateau) by "dualism" (indicator 28) serving as a constraining factor, and "participation opportunities for small farmers and rural workers" (indicator 35) identifying as a facilitative (big step) factor. It would appear that these social factors interact with technological-economic factors to either accelerate or slow down overall growth. Thus, so far as land reform is concerned, the scales support the view that technological-economic change usually leads socio-political change, but absence of the latter is an effective drag on the former unless accompanying changes occur in a sequential order. Conversely, when socio-political changes occur without the technological-economic changes with which they are normally associated, they may slow or even temporarily reverse the thrust of the latter. (Bolivia and Mexico represent situations in which socio-political change preceded technological-economic change, as discussed below).

Overall, the countries in the sample show a remarkable consistency of ranking on all three scales. Alteration of country rankings is greatest on the socio-political sub-scale. This is apparently due to weighting of the selection of scale indicators and the country sample towards agricultural and land tenurial considerations and our identification of increased individual freedom as a positive development factor. Thus, Nigeria and Kenya rank low on the technical-economic scale but higher on the socio-political scale in 1970 because of not yet having experienced strongly the impact of feudal landholding patterns. Conversely, at the other end of the scale, Yugoslavia and Hungary rank higher on the general and technical-economic scales but low on the socio-political scale because their dominant mode of agricultural production takes the form of a system which might be called "neo-feudal", in that cultivator decision-making functions and control over disposal of production surpluses have been assumed by the state.

The rankings on the general development scale and the technical-economic sub-scale are more uniform. Significantly, the rankings are exactly the same for the top ten countries on both scales. Of the countries in this grouping, five are in what we have classified as the first modern phase of land reform in relation to the development process, and the others are in the third transitional phase (see Figure B). The basic importance of land reform to modernization is reflected by the fact that all of these countries but the Philippines have had, or are in the process of having, land distribution reforms of significant proportion. In the Philippines changes are occurring in the national society and particularly in the rural areas, leading to significant distributive reforms which started in 1972.

Cuba, which ranks just below the Philippines, had its reform relatively recently and quickly as part of a socialist revolution. The result was similar in character to that of the most recent reforms in Yugoslavia and Hungary where control over cultivator decision-making and the disposal of surplus production passed arbitrarily into the hands of the state, with no countervailing power, such as is now emerging in Yugoslavia.

The four countries below the top ten on the scale (Iran, South Vietnam, Turkey and Egypt) are differentiated primarily in terms of the extent of distributive land reform which has occurred, level of technological development in each country and, in the case of

Iran, level of industrial export. Three of these four countries (Iran, Egypt and South Vietnam) have carried out distributive land reform programmes in recent years. Thus, for countries within the sample, there is clearly a strong correlation between the land reform (though not necessarily its nature) and the overall level of economic and social development.

Of the countries on the lower half of the scale only Bolivia has undergone a significant and sustained distributive reform. Bolivia's reform occurred at a low level of technological-economic development but also before feudalism had been nationally consolidated. It was precipitated by the breakdown of domestic controls which occurred in the aftermath of the Chaco war with Paraguay. The war served as an accelerator bringing on reform before technological-economic penetration from the centre had catalyzed commercialization in the rural areas. As a result, the reform led to a retraction into almost a pre-feudal situation conservatizing the peasantry and doing little to stimulate national economic growth. Thus, the "leads" which Bolivia enjoys in socio-political terms (General scale items 53, 61, 66, 72 and 78) are too distant from the other development factors with which they are usually associated to have a strong development impact. The level of technological-economic development in rural areas at the time of the reform was not high enough to either stimulate the peasant beneficiaries to take full developmental advantage of their new status or to permit them to do so. Having acquired their basic goal of land ownership the peasantry solidified against rather than for further change. As a result, Bolivia is left with a relatively egalitarian but underdeveloped agricultural sector and a foreign dominated extractive industrial sector.

Mexico's transitional phase reforms were also initiated at an unusually early stage of the national development process. However, implementation was partial and attenuated. As a result Mexico's rural sector has become very dualistic. Modernization and commercialization have occurred primarily on large farms and overall growth of the agricultural sector is retarded by the still predominantly traditional small farm sub-sector which gained land but little political and economic power as a result of the reform. Also, external forces have been extremely important in Mexico's case.

V. INTERIM SUMMARY FOR PART I.

It was possible to develop and test as significant a General Development and Agrarian Reform model constructed for analysis and application to policy formulation and agrarian reform programmes. It could be shown that qualitative data in binary form can be used to substantiate the phases and structural sequence of the model through the measured ranking of the existing level of individual countries in the development phase. Part II of this article will be published in one of the following issues of Land Reform, Land Settlement and Cooperatives and will present further support for the model through factor analysis of quantitative data and the correlation between factor and scale scores.

References

- UNITED NATIONS 1962 Progress in land reform. Third report. New York, 104 p.
- HUNTER, G. 1969 Modernizing peasant societies. London, Oxford University Press. 324 p.
- LYMAN, P.N. & FRENCH, J.T. 1970 Land reforms political results. War on Hunger (Washington) 4 (8): 3, 16-17
- VOELKNER, H.E. 1972 Scalogram analysis of development. Paper prepared for the Development Research Center, International Bank for Reconstruction and Development, Washington, D.C., February 1972
- VOELKNER, H.E. The structural complexity growth model and scalogram analysis of development and human eco-systems. To be published by UNRISD, Geneva.
- FAO 1966 Report on the 1960 world census of agriculture, Vol.I a. Rome, 234 p.
- FAO 1967 Report on the 1960 world census of agriculture, Vol.I b. Rome, 319 p.

Annex A.

Guttman scaling as a method for measuring levels of societal structure

To arrive at a scale, the scaling process rearranges alternately the binary data of cases (presented vertically) and items (presented horizontally) to maximize a separation of "1's" (to the lower right in the "Scalogramms" computer programme) and "0's" into the opposite corner of the matrix. Zeros interspersed among the "1's" and "1's" interspersed among the "0's" are identified as scale deviations. The primary aim of the scaling process is to reduce such deviations by removing a few items at a time with the largest number of deviations and reordering cases and items each time this step is necessary, until an acceptable scale is produced.

The acceptability of a scale is determined by the coefficient of scalability (Menzel)¹ which is based on the amount of deviations present within a scale. The coefficient measures the percent perfection of a scale. A 100 percent or perfect scale is one without any "0's" among the "1's" and vice versa. Such a scale would have a coefficient of 1.00. By convention the minimum acceptable limit of scale imperfection is 40 percent. This means that a 60 percent scale or a scalability coefficient of 0.60 has to be attained for a scale to be acceptable.

Only items (attributes) are removed to improve a scale. Items which do not fit into the systematic accumulation, i.e., do not scale sufficiently, are removed by placing them on top of the scale above a dotted scale line (not illustrated in Scale I). The removed items may form what is called a "shadow scale" which contains unacceptable amounts of deviation but which, nevertheless, contrast the "1's" and "0's" roughly in the same parts of the matrix as the actual scale does below. Shadow scales are significant in time-change analysis. There are indications from a limited number of time series scales that such items over time, fill their zero deviations and scale at a later period.

For basic instructions on cumulative scaling see: Guttman, L. "Cornell technique for scale construction" In: Brion, R.W.O. et al., Readings in General Sociology. Cambridge, Mass., Houghton Mifflin Co., 1951.

The acceptability of a cumulative scale is measured by Menzel's Coefficient of Scalability (CS). The formula is:

$$1.00 - \frac{\text{deviations}}{\text{least sum non-modals}} = \text{CS} = 1.00 - \frac{\sum \text{Dev.}}{\sum \text{NM}}$$

(a) deviations are the "1's" on the "zero side" of the scale line and the "0's" on the "one side" of the scale line.

(b) non-modals are the lesser number of either "1's" or "0's" in each row or each column. Count the non-modals for each row and for each column and add each separately. The smaller sum is generally to be used in the formula to compute the CS. The maximum number of non-modals is exactly one half in whole numbers of the total number, for even numbers in a row or a column, e.g. $\frac{1}{2}$ of 22 = 11 maximum non-modal, but for uneven numbers such as $\frac{1}{2}$ of 23 = 12 and 11, 11 is the lesser whole number and the maximum non-modals.

^{1/} Menzel, H. A new coefficient for scalogram analysis. Public Opinion Quarterly 1953 (Columbia University, New York, N.Y.) 17 (2): 268-280.

| INDICATOR RANK | GENERAL DEVELOPMENT AND AGRARIAN REFORM SCALE (1970-71) | | | |
|----------------|---|---------------------|---------------------|---------------------------|
| | A. Prefeudal, 1st and 2nd Feudal Phases | B. 3rd Feudal Phase | C. 1st Trans. Phase | D. 2nd Transitional Phase |
| 45 | 1 | 1 | 1 | 1 |
| 44 | 0 | 1 | 1 | 1 |
| 43 | 0 | 1 | 1 | 1 |
| 42 | 0 | 1 | 1 | 1 |
| 41 | 0 | 1 | 1 | 1 |
| 40 | 0 | 1 | 1 | 1 |
| 39 | 0 | 1 | 1 | 1 |
| 38 | 0 | 1 | 1 | 1 |
| 37 | 0 | 1 | 1 | 1 |
| 36 | 0 | 1 | 1 | 1 |
| 35 | 0 | 1 | 1 | 1 |
| 34 | 0 | 1 | 1 | 1 |
| 33 | 0 | 1 | 1 | 1 |
| 32 | 0 | 1 | 1 | 1 |
| 31 | 0 | 1 | 1 | 1 |
| 30 | 0 | 1 | 1 | 1 |
| 29 | 0 | 1 | 1 | 1 |
| 28 | 0 | 1 | 1 | 1 |
| 27 | 0 | 1 | 1 | 1 |
| 26 | 0 | 1 | 1 | 1 |
| 25 | 0 | 1 | 1 | 1 |
| 24 | 0 | 1 | 1 | 1 |
| 23 | 1 | 1 | 1 | 1 |
| 22 | 1 | 1 | 1 | 1 |
| 21 | 1 | 1 | 1 | 1 |
| 20 | 1 | 1 | 1 | 1 |
| 19 | 1 | 1 | 1 | 1 |
| 18 | 1 | 1 | 1 | 1 |
| 17 | 1 | 1 | 1 | 1 |
| 16 | 1 | 1 | 1 | 1 |
| 15 | 1 | 1 | 1 | 1 |
| 14 | 1 | 1 | 1 | 1 |
| 13 | 1 | 1 | 1 | 1 |
| 12 | 1 | 1 | 1 | 1 |
| 11 | 1 | 1 | 1 | 1 |
| 10 | 1 | 1 | 1 | 1 |
| 9 | 1 | 1 | 1 | 1 |
| 8 | 1 | 1 | 1 | 1 |
| 7 | 1 | 1 | 1 | 1 |
| 6 | 1 | 1 | 1 | 1 |
| 5 | 1 | 1 | 1 | 1 |
| 4 | 1 | 1 | 1 | 1 |
| 3 | 1 | 1 | 1 | 1 |
| 2 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 |
| 45 | 2 | 1 | 1 | 1 |
| 44 | 4 | 1 | 1 | 1 |
| 43 | 4 | 1 | 1 | 1 |
| 42 | 0 | 1 | 1 | 1 |
| 41 | 7 | 1 | 1 | 1 |
| 40 | 4 | 1 | 1 | 1 |
| 39 | 6 | 1 | 1 | 1 |
| 38 | 11 | 1 | 1 | 1 |
| 37 | 11 | 1 | 1 | 1 |
| 36 | 9 | 1 | 1 | 1 |
| 35 | 6 | 1 | 1 | 1 |
| 34 | 4 | 1 | 1 | 1 |
| 33 | 2 | 1 | 1 | 1 |
| 32 | 4 | 1 | 1 | 1 |
| 31 | 8 | 1 | 1 | 1 |
| 30 | 6 | 1 | 1 | 1 |
| 29 | 9 | 1 | 1 | 1 |
| 28 | 7 | 1 | 1 | 1 |
| 27 | 6 | 1 | 1 | 1 |
| 26 | 9 | 1 | 1 | 1 |
| 25 | 7 | 1 | 1 | 1 |
| 24 | 11 | 1 | 1 | 1 |
| 23 | 9 | 1 | 1 | 1 |
| 22 | 6 | 1 | 1 | 1 |
| 21 | 4 | 1 | 1 | 1 |
| 20 | 2 | 1 | 1 | 1 |
| 19 | 4 | 1 | 1 | 1 |
| 18 | 8 | 1 | 1 | 1 |
| 17 | 6 | 1 | 1 | 1 |
| 16 | 9 | 1 | 1 | 1 |
| 15 | 7 | 1 | 1 | 1 |
| 14 | 6 | 1 | 1 | 1 |
| 13 | 9 | 1 | 1 | 1 |
| 12 | 7 | 1 | 1 | 1 |
| 11 | 6 | 1 | 1 | 1 |
| 10 | 9 | 1 | 1 | 1 |
| 9 | 7 | 1 | 1 | 1 |
| 8 | 6 | 1 | 1 | 1 |
| 7 | 9 | 1 | 1 | 1 |
| 6 | 7 | 1 | 1 | 1 |
| 5 | 6 | 1 | 1 | 1 |
| 4 | 9 | 1 | 1 | 1 |
| 3 | 7 | 1 | 1 | 1 |
| 2 | 6 | 1 | 1 | 1 |
| 1 | 9 | 1 | 1 | 1 |
| 45 | 2 | 1 | 1 | 1 |
| 44 | 4 | 1 | 1 | 1 |
| 43 | 4 | 1 | 1 | 1 |
| 42 | 0 | 1 | 1 | 1 |
| 41 | 7 | 1 | 1 | 1 |
| 40 | 4 | 1 | 1 | 1 |
| 39 | 6 | 1 | 1 | 1 |
| 38 | 11 | 1 | 1 | 1 |
| 37 | 11 | 1 | 1 | 1 |
| 36 | 9 | 1 | 1 | 1 |
| 35 | 6 | 1 | 1 | 1 |
| 34 | 4 | 1 | 1 | 1 |
| 33 | 2 | 1 | 1 | 1 |
| 32 | 4 | 1 | 1 | 1 |
| 31 | 8 | 1 | 1 | 1 |
| 30 | 6 | 1 | 1 | 1 |
| 29 | 9 | 1 | 1 | 1 |
| 28 | 7 | 1 | 1 | 1 |
| 27 | 6 | 1 | 1 | 1 |
| 26 | 9 | 1 | 1 | 1 |
| 25 | 7 | 1 | 1 | 1 |
| 24 | 11 | 1 | 1 | 1 |
| 23 | 9 | 1 | 1 | 1 |
| 22 | 6 | 1 | 1 | 1 |
| 21 | 4 | 1 | 1 | 1 |
| 20 | 2 | 1 | 1 | 1 |
| 19 | 4 | 1 | 1 | 1 |
| 18 | 8 | 1 | 1 | 1 |
| 17 | 6 | 1 | 1 | 1 |
| 16 | 9 | 1 | 1 | 1 |
| 15 | 7 | 1 | 1 | 1 |
| 14 | 6 | 1 | 1 | 1 |
| 13 | 9 | 1 | 1 | 1 |
| 12 | 7 | 1 | 1 | 1 |
| 11 | 6 | 1 | 1 | 1 |
| 10 | 9 | 1 | 1 | 1 |
| 9 | 7 | 1 | 1 | 1 |
| 8 | 6 | 1 | 1 | 1 |
| 7 | 9 | 1 | 1 | 1 |
| 6 | 7 | 1 | 1 | 1 |
| 5 | 6 | 1 | 1 | 1 |
| 4 | 9 | 1 | 1 | 1 |
| 3 | 7 | 1 | 1 | 1 |
| 2 | 6 | 1 | 1 | 1 |
| 1 | 9 | 1 | 1 | 1 |
| 45 | 2 | 1 | 1 | 1 |
| 44 | 4 | 1 | 1 | 1 |
| 43 | 4 | 1 | 1 | 1 |
| 42 | 0 | 1 | 1 | 1 |
| 41 | 7 | 1 | 1 | 1 |
| 40 | 4 | 1 | 1 | 1 |
| 39 | 6 | 1 | 1 | 1 |
| 38 | 11 | 1 | 1 | 1 |
| 37 | 11 | 1 | 1 | 1 |
| 36 | 9 | 1 | 1 | 1 |
| 35 | 6 | 1 | 1 | 1 |
| 34 | 4 | 1 | 1 | 1 |
| 33 | 2 | 1 | 1 | 1 |
| 32 | 4 | 1 | 1 | 1 |
| 31 | 8 | 1 | 1 | 1 |
| 30 | 6 | 1 | 1 | 1 |
| 29 | 9 | 1 | 1 | 1 |
| 28 | 7 | 1 | 1 | 1 |
| 27 | 6 | 1 | 1 | 1 |
| 26 | 9 | 1 | 1 | 1 |
| 25 | 7 | 1 | 1 | 1 |
| 24 | 11 | 1 | 1 | 1 |
| 23 | 9 | 1 | 1 | 1 |
| 22 | 6 | 1 | 1 | 1 |
| 21 | 4 | 1 | 1 | 1 |
| 20 | 2 | 1 | 1 | 1 |
| 19 | 4 | 1 | 1 | 1 |
| 18 | 8 | 1 | 1 | 1 |
| 17 | 6 | 1 | 1 | 1 |
| 16 | 9 | 1 | 1 | 1 |
| 15 | 7 | 1 | 1 | 1 |
| 14 | 6 | 1 | 1 | 1 |
| 13 | 9 | 1 | 1 | 1 |
| 12 | 7 | 1 | 1 | 1 |
| 11 | 6 | 1 | 1 | 1 |
| 10 | 9 | 1 | 1 | 1 |
| 9 | 7 | 1 | 1 | 1 |
| 8 | 6 | 1 | 1 | 1 |
| 7 | 9 | 1 | 1 | 1 |
| 6 | 7 | 1 | 1 | 1 |
| 5 | 6 | 1 | 1 | 1 |
| 4 | 9 | 1 | 1 | 1 |
| 3 | 7 | 1 | 1 | 1 |
| 2 | 6 | 1 | 1 | 1 |
| 1 | 9 | 1 | 1 | 1 |
| 45 | 2 | 1 | 1 | 1 |
| 44 | 4 | 1 | 1 | 1 |
| 43 | 4 | 1 | 1 | 1 |
| 42 | 0 | 1 | 1 | 1 |
| 41 | 7 | 1 | 1 | 1 |
| 40 | 4 | 1 | 1 | 1 |
| 39 | 6 | 1 | 1 | 1 |
| 38 | 11 | 1 | 1 | 1 |
| 37 | 11 | 1 | 1 | 1 |
| 36 | 9 | 1 | 1 | 1 |
| 35 | 6 | 1 | 1 | 1 |
| 34 | 4 | 1 | 1 | 1 |
| 33 | 2 | 1 | 1 | 1 |
| 32 | 4 | 1 | 1 | 1 |
| 31 | 8 | 1 | 1 | 1 |
| 30 | 6 | 1 | 1 | 1 |
| 29 | 9 | 1 | 1 | 1 |
| 28 | 7 | 1 | 1 | 1 |
| 27 | 6 | 1 | 1 | 1 |
| 26 | 9 | 1 | 1 | 1 |
| 25 | 7 | 1 | 1 | 1 |
| 24 | 11 | 1 | 1 | 1 |
| 23 | 9 | 1 | 1 | 1 |
| 22 | 6 | 1 | 1 | 1 |
| 21 | 4 | 1 | 1 | 1 |
| 20 | 2 | 1 | 1 | 1 |
| 19 | 4 | 1 | 1 | 1 |
| 18 | 8 | 1 | 1 | 1 |
| 17 | 6 | 1 | 1 | 1 |
| 16 | 9 | 1 | 1 | 1 |
| 15 | 7 | 1 | 1 | 1 |
| 14 | 6 | 1 | 1 | 1 |
| 13 | 9 | 1 | 1 | 1 |
| 12 | 7 | 1 | 1 | 1 |
| 11 | 6 | 1 | 1 | 1 |
| 10 | 9 | 1 | 1 | 1 |
| 9 | 7 | 1 | 1 | 1 |
| 8 | 6 | 1 | 1 | 1 |
| 7 | 9 | 1 | 1 | 1 |
| 6 | 7 | 1 | 1 | 1 |
| 5 | 6 | 1 | 1 | 1 |
| 4 | 9 | 1 | 1 | 1 |
| 3 | 7 | 1 | 1 | 1 |
| 2 | 6 | 1 | 1 | 1 |
| 1 | 9 | 1 | 1 | 1 |
| 45 | 2 | 1 | 1 | 1 |
| 44 | 4 | 1 | 1 | 1 |
| 43 | 4 | 1 | 1 | 1 |
| 42 | 0 | 1 | 1 | 1 |
| 41 | 7 | 1 | 1 | 1 |
| 40 | 4 | 1 | 1 | 1 |
| 39 | 6 | 1 | 1 | 1 |
| 38 | 11 | 1 | 1 | 1 |
| 37 | 11 | 1 | 1 | 1 |
| 36 | 9 | 1 | 1 | 1 |
| 35 | 6 | 1 | 1 | 1 |
| 34 | 4 | 1 | 1 | 1 |
| 33 | 2 | 1 | 1 | 1 |
| 32 | 4 | 1 | 1 | 1 |
| 31 | 8 | 1 | 1 | 1 |
| 30 | 6 | 1 | 1 | 1 |
| 29 | 9 | 1 | 1 | 1 |
| 28 | 7 | 1 | 1 | 1 |
| 27 | 6 | 1 | 1 | 1 |
| 26 | 9 | 1 | 1 | 1 |
| 25 | 7 | 1 | 1 | 1 |
| 24 | 11 | 1 | 1 | 1 |
| 23 | 9 | 1 | 1 | 1 |
| 22 | 6 | 1 | 1 | 1 |
| 21 | 4 | 1 | 1 | 1 |
| 20 | 2 | 1 | 1 | 1 |
| 19 | 4 | 1 | 1 | 1 |
| 18 | 8 | 1 | 1 | 1 |
| 17 | 6 | 1 | 1 | 1 |
| 16 | 9 | 1 | 1 | 1 |
| 15 | 7 | 1 | 1 | 1 |
| 14 | 6 | 1 | 1 | 1 |
| 13 | 9 | 1 | 1 | 1 |
| 12 | 7 | 1 | 1 | 1 |
| 11 | 6 | 1 | 1 | 1 |
| 10 | 9 | 1 | 1 | 1 |
| 9 | 7 | 1 | 1 | 1 |
| 8 | 6 | 1 | 1 | 1 |
| 7 | 9 | 1 | 1 | 1 |
| 6 | 7 | 1 | 1 | 1 |
| 5 | 6 | 1 | 1 | 1 |
| 4 | 9 | 1 | 1 | 1 |
| 3 | 7 | 1 | 1 | 1 |
| 2 | 6 | 1 | 1 | 1 |
| 1 | 9 | 1 | 1 | 1 |

SCALE I.

GENERAL DEVELOPMENT AND AGRARIAN REFORM SCALE (1970-71)

(1st page Indicator Ranks Nos. 1-45)

$$\text{Coefficient of Scalability } 1.0 - \frac{152}{469} = 0.68$$

Blanks mean no data available or not applicable
? means rating uncertain

INDICATOR
RANK

Indicators

| Indicator Rank | Indicator |
|------------------------|--|
| 45 | The country is dualistic traditional/modern: dual sectors at least equal |
| 44 | Tyre production present |
| 43 | Commercial nitrogenous fertilizer production present |
| 42 | Radio receiver production present |
| 41 | Crude steel production present |
| 40 | Political stability: civil war or coup d'etat has not occurred in past 2 years (1969-71) |
| 39 | Vertical social mobility is fairly open: barriers breaking down |
| 38 | Government personnel recruitment is no longer primarily from traditional elite |
| 37 | At least primary education accessible to the majority of the rural population |
| 36 | Modern irrigation systems adequately utilized and maintained |
| 35 | Modern medicines and nurse-level advice available in rural areas |
| 34 | Rural vote at least through paternalistic organizations |
| 33 | Size of middle class is conducive to development |
| 32 | At least most provincial centres are connected by all-weather roads |
| 31 | Rural political influence at least through the landlord or tribal leaders |
| 30 | Internal regional planning is an important part of national planning |
| 29 | Consumer goods distribution system present in rural areas |
| 28 | At least non-capital goods industry present for agricultural inputs and consumer goods |
| 27 | Political tensions: demonstrations or riots have occurred in past 2 years (1969-71) |
| 26 | Electricity is available in the majority of municipal towns |
| 25 | Medical doctors are present in urban areas |
| 24 | Most villages are accessible by motor transport |
| 23 | The neo-feudal serf system, public or private, has been officially abolished |
| 22 | All arable land legally accessible for land reform action |
| 21 | Seasonal unemployment is or has been high in staple crop production |
| 20 | Neo-feudal absentee landlord (public or private) is or has been predominant |
| 19 | A distinct dual mini-latifundia agricultural sector is or has been present |
| 18 | Landlord or plantation sector is or has been blocking development of subsistence sector |
| 17 | Actual land redistribution has at least been attempted |
| 16 | Minifundia cultivator decisions are or have been made by public or private landlords |
| 15 | Government bureaucracy is or has been considered paternalistic and rigid |
| 14 | National production and agricultural policy are or have been controlled by landed elite |
| 13 | At least hand and artisan industry present for agricultural inputs and consumer goods |
| 12 | At least rent and tax classification is registered |
| 11 | Land tax is at least legislated |
| 10 | Neo-feudal paternalistic landlord (public or private) is or has been predominant |
| 9 | At least animal drawn implements are used in staple crop production |
| 8 | National solidarity: primary loyalty at least to extended family or ethnic group |
| 7 | Rural income distribution is or has been extremely disparate |
| 6 | A dual society is or has been distinct, but between regions more than classes |
| 5 | A distinct dual society is or has been present in rural areas |
| 4 | Staple crops are primarily produced on minifundia farm units |
| 3 | Land development (irrigation, etc.) is or has been done by hand labour-tools only |
| 2 | At least hand tools are used in staple crop production |
| 1 | Shifting agriculture or equivalent seminomadic agricultural practices have been present |
| Deviations per Country | |

./. continued on next page with Indicator Ranks Nos.46-85

Scale I. continued..

General Development and Agrarian Reform Scale (1970-71)

| | | INDICATOR RANK | Guatemala | Ecuador | Peru | Brazil (NE) | Bolivia | Pakistan | Iraq | Nigeria | Kenya | India | Colombia | Brazil (exc. NE) | Algeria | Tunisia | Turkey | Egypt | S. Vietnam | Iran | Cuba | Philippines | Venezuela | Mexico | Chile | Yugoslavia | Hungary | Taiwan | S. Korea | Japan | |
|---------------------------|----|----------------|-----------|---------|------|-------------|---------|----------|------|---------|-------|-------|----------|------------------|---------|---------|--------|-------|------------|------|------|-------------|-----------|--------|-------|------------|---------|--------|----------|-------|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | |
| F. 1st Modern Phase | 85 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 82 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 79 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 77 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| E. 3rd Transitional Phase | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 65 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |

Indicators not Scaling

1. Income distribution relatively egalitarian
2. The government bureaucracy is considered relatively efficient and service oriented
3. Rural vote primarily by independent individuals
4. At least dirt roads or small boat water transportation present at most villages
5. Capital goods industries are present in the country
6. Basic resources are manufactured in the country
7. Resources are imported for industrial processing
8. Landlord or plantation sector not blocking development of subsistence sector or land reform

INDICATOR RANK

Indicators

| ← Country Rank | Indicators |
|----------------|--|
| 85 | Surplus arable land into soil bank. Staple food production excessive |
| 84 | Government personnel recruitment by open political and civil service process |
| 83 | Consensus oriented political system; (two-party or party blocks) |
| 82 | Modern consumer credit available to rural population |
| 81 | Multi-lingual problems have been overcome in rural areas where applicable |
| 80 | Vertical social mobility has no serious barriers |
| 79 | Disguised unemployment is no longer serious (agricultural and government service) |
| 78 | Total employment in agriculture is declining |
| 77 | Population growth is declining and under 2.5% |
| 76 | Colonizable lands not physically available in significant amounts at economical costs |
| 75 | Population control effective nationally |
| 74 | Medical doctors are available in rural areas |
| 73 | Higher education is accessible to the rural population |
| 72 | Land tax is effectively collected |
| 71 | Quantity of technical training (excluding teachers) no longer a serious development constraint |
| 70 | Population controls started in urban areas indicate beginning effectiveness |
| 69 | The country is dualistic traditional/modern: modern sector predominates |
| 68 | Aluminum production present |
| 67 | Modern land classification achieved |
| 66 | Unionization of farm labour and/or organization of tenants and small farmers is effective |
| 65 | Political system: No longer military or authoritarian, at least multi-party |
| 64 | Per capita food production increased at least 10% (1956-65) |
| 63 | At least small motorized mechanization significant in staple crop production |
| 62 | Modern production credit available significantly to minifundia operators |
| 61 | Neo-feudal latifundia system at least curtailed |
| 60 | National solidarity: primary loyalty to the nation |
| 59 | Electricity is available in at least the majority of villages |
| 58 | Land development by modern mechanized methods |
| 57 | Industrial exports sufficient to pay for food deficits |
| 56 | Minority discrimination has been significantly reduced |
| 55 | Industrial exports sufficient to support imports of modern agricultural inputs |
| 54 | Majority of minifundia cultivators have freedom of decision in production |
| 53 | Land redistribution effective in alleviating landless cultivator problem |
| 52 | Agricultural research and technology distribution effective (public or private) |
| 51 | National agricultural production and policy are controlled by non-agricultural sector |
| 50 | Industrial production absorbs surplus agricultural labour |
| 49 | Chemical fertilizers used significantly in staple crop production |
| 48 | Teacher training is adequate in quantity |
| 47 | Chemical pest control used significantly in staple crop production |
| 46 | Production inputs distribution system effective in rural areas (public or private) |

SCALE II.

SUB-SCALE OF TECHNOLOGICAL AND ECONOMIC DEVELOPMENT INDICATORS (1970-71)

| INDICATOR RANK | Phase | | | |
|----------------|-----------------------------------|---------------------------|---------------------------|---------------------|
| | ABC. Feudal thru 1st Trans. Phase | D. 2nd Transitional Phase | E. 3rd Transitional Phase | F. 1st Modern Phase |
| 1 | 1 | 1 | 1 | 1 |
| 2 | 1 | 1 | 1 | 1 |
| 3 | 1 | 1 | 1 | 1 |
| 4 | 1 | 1 | 1 | 1 |
| 5 | 1 | 1 | 1 | 1 |
| 6 | 1 | 1 | 1 | 1 |
| 7 | 1 | 1 | 1 | 1 |
| 8 | 1 | 1 | 1 | 1 |
| 9 | 1 | 1 | 1 | 1 |
| 10 | 1 | 1 | 1 | 1 |
| 11 | 1 | 1 | 1 | 1 |
| 12 | 1 | 1 | 1 | 1 |
| 13 | 1 | 1 | 1 | 1 |
| 14 | 1 | 1 | 1 | 1 |
| 15 | 1 | 1 | 1 | 1 |
| 16 | 1 | 1 | 1 | 1 |
| 17 | 1 | 1 | 1 | 1 |
| 18 | 1 | 1 | 1 | 1 |
| 19 | 1 | 1 | 1 | 1 |
| 20 | 1 | 1 | 1 | 1 |
| 21 | 1 | 1 | 1 | 1 |
| 22 | 1 | 1 | 1 | 1 |
| 23 | 1 | 1 | 1 | 1 |
| 24 | 1 | 1 | 1 | 1 |
| 25 | 1 | 1 | 1 | 1 |
| 26 | 1 | 1 | 1 | 1 |
| 27 | 1 | 1 | 1 | 1 |
| 28 | 1 | 1 | 1 | 1 |
| 29 | 1 | 1 | 1 | 1 |
| 30 | 1 | 1 | 1 | 1 |
| 31 | 1 | 1 | 1 | 1 |
| 32 | 1 | 1 | 1 | 1 |
| 33 | 1 | 1 | 1 | 1 |
| 34 | 1 | 1 | 1 | 1 |
| 35 | 1 | 1 | 1 | 1 |
| 36 | 1 | 1 | 1 | 1 |
| 37 | 1 | 1 | 1 | 1 |
| 38 | 1 | 1 | 1 | 1 |
| 39 | 1 | 1 | 1 | 1 |
| 40 | 1 | 1 | 1 | 1 |
| 41 | 1 | 1 | 1 | 1 |
| 42 | 1 | 1 | 1 | 1 |
| 43 | 1 | 1 | 1 | 1 |
| 44 | 1 | 1 | 1 | 1 |
| 45 | 1 | 1 | 1 | 1 |
| 46 | 1 | 1 | 1 | 1 |
| 47 | 1 | 1 | 1 | 1 |
| 48 | 1 | 1 | 1 | 1 |
| 49 | 1 | 1 | 1 | 1 |
| 1 | Guatemala | | | |
| 2 | Ecuador | | | |
| 3 | Peru | | | |
| 4 | Bolivia | | | |
| 5 | Brazil (NE) | | | |
| 6 | Kenya | | | |
| 7 | Nigeria | | | |
| 8 | Iraq | | | |
| 9 | Pakistan | | | |
| 10 | India | | | |
| 11 | Brazil (exc. NE) | | | |
| 12 | Colombia | | | |
| 13 | Algeria | | | |
| 14 | Tunisia | | | |
| 15 | Iran | | | |
| 16 | S. Vietnam | | | |
| 17 | Turkey | | | |
| 18 | Egypt | | | |
| 19 | Cuba | | | |
| 20 | Philippines | | | |
| 21 | Venezuela | | | |
| 22 | Mexico | | | |
| 23 | Chile | | | |
| 24 | Yugoslavia | | | |
| 25 | Hungary | | | |
| 26 | Taiwan | | | |
| 27 | Korea | | | |
| 28 | Japan | | | |
| | RANK ON MAIN SCALE | | | |

$$\text{Coefficient of Scalability } 1.0 - \frac{61}{192} = \underline{\underline{0.68}}$$

Blanks in scale mean no data available or not applicable
 + This indicator did not scale
 ? means rating uncertain

| Rank on Main Scale | Country Rank | Indicators |
|--------------------|--------------|--|
| 43 | | Consensus-oriented political system; (two-party or party blocks) |
| 42 | | Colonizable lands not physically available in significant amounts at economic costs + |
| 41 | | Vertical social mobility has no serious barriers |
| 40 | | Disguised unemployment : no longer serious in agricultural and government service |
| 39 | | Government personnel recruitment by open political and civil service process |
| 38 | | Political system: No longer military or authoritarian; at least multi-party |
| 37 | | Multi-lingual problems have been overcome in rural areas where applicable |
| 36 | | Neo-feudal latifundia system at least curtailed |
| 35 | | Unionization of farm labour and/or of tenants and small farmers is effective |
| 34 | | The country is dualistic traditional/modern: modern sector predominates |
| 33 | | National solidarity: primary loyalty to the nation |
| 32 | | Minority discrimination has been significantly reduced |
| 31 | | Land tax is effectively collected |
| 30 | | Land redistribution effective in alleviating landless cultivator problem |
| 29 | | National agricultural production and policy are controlled by non-agricultural sector |
| 28 | | The country is dualistic traditional/modern: at least dual sectors equal |
| 27 | | Majority of minifundia cultivators have freedom of decision in production |
| 26 | | Vertical social mobility fairly open; barriers breaking down |
| 25 | | Government personnel recruitment is no longer primarily from traditional elite |
| 24 | | Political stability: civil war or coup d'etat has not occurred in past 2 years (1969-71) |
| 23 | | Rural vote at least through paternalistic organizations |
| 22 | | Size of the middle class is conducive to development |
| 21 | | Rural political influence at least through the landlord or tribal leaders |
| 20 | | Internal regional planning is an important part of national planning |
| 19 | | Political tensions: demonstrations or riots have occurred in past 2 years (1969-71) |
| 18 | | The neo-feudal serf system, public or private, has been officially abolished |
| 17 | | All arable land is legally accessible for land reform action |
| 16 | | Seasonal unemployment is or has been high in staple crop production |
| 15 | | Neo-feudal absentee landlord (public or private) is or has been predominant |
| 14 | | A distinct dual mini-latifundia agricultural sector is or has been present |
| 13 | | Landlord or plantation sector is or has been blocking development of subsistence sector |
| 12 | | Actual land redistribution has at least been attempted |
| 11 | | Minifundia cultivator decisions are or have been made by public or private landlords |
| 10 | | Government bureaucracy is or has been considered paternalistic and rigid |
| 9 | | National production and agricultural policy are or have been controlled by landed elite |
| 8 | | At least rent and tax classification of land is registered |
| 7 | | Land tax is at least legislated |
| 6 | | Neo-feudal paternalistic landlord (public or private) is or has been predominant |
| 5 | | National solidarity: primary loyalty to the extended family or ethnic group |
| 4 | | Rural income distribution is or has been extremely disparate |
| 3 | | A dual society is or has been distinct, but between regions more than classes |
| 2 | | A distinct dual society is or has been present in rural areas |
| 1 | | Staple crops are primarily produced on minifundia farm units |
| | | Deviations per country |

SCALE III.

SOCIO-POLITICAL SUB-SCALE (1970-71)

| INDICATOR RANK | Phase | | | | | | RANK ON MAIN SCALE |
|----------------|--------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|
| | A. Prefeudal 1st & 2nd Feudal Phases | B. 3rd Feudal Phase | C. 1st Trans. Phase | D. 2nd Trans. Phase | E. 3rd Trans. Phase | F. 1st Modern Phase | |
| | 1-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 43 |
| 2 | 0 | 1 | 1 | 1 | 1 | 1 | 42 |
| 3 | 0 | 1 | 1 | 1 | 1 | 1 | 41 |
| 4 | 1 | 1 | 1 | 1 | 1 | 1 | 40 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 39 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 38 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 37 |
| 8 | 1 | 1 | 1 | 1 | 1 | 1 | 36 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 35 |
| 10 | 1 | 1 | 1 | 1 | 1 | 1 | 34 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 33 |
| 12 | 1 | 1 | 1 | 1 | 1 | 1 | 32 |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 31 |
| 14 | 1 | 1 | 1 | 1 | 1 | 1 | 30 |
| 15 | 1 | 1 | 1 | 1 | 1 | 1 | 29 |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 28 |
| 17 | 1 | 1 | 1 | 1 | 1 | 1 | 27 |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 26 |
| 19 | 1 | 1 | 1 | 1 | 1 | 1 | 25 |
| 20 | 1 | 1 | 1 | 1 | 1 | 1 | 24 |
| 21 | 1 | 1 | 1 | 1 | 1 | 1 | 23 |
| 22 | 1 | 1 | 1 | 1 | 1 | 1 | 22 |
| 23 | 1 | 1 | 1 | 1 | 1 | 1 | 21 |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 20 |
| 25 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 18 |
| 27 | 1 | 1 | 1 | 1 | 1 | 1 | 17 |
| 28 | 1 | 1 | 1 | 1 | 1 | 1 | 16 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 15 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 14 |
| 31 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 32 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| 33 | 1 | 1 | 1 | 1 | 1 | 1 | 11 |
| 34 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 35 | 1 | 1 | 1 | 1 | 1 | 1 | 9 |
| 36 | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| 37 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| 38 | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
| 39 | 1 | 1 | 1 | 1 | 1 | 1 | 5 |
| 40 | 1 | 1 | 1 | 1 | 1 | 1 | 4 |
| 41 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| 42 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| 43 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 44 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |

$$\text{Coefficient of Scalability } 1.0 - \frac{104}{344} = \underline{\underline{0.70}}$$

Blanks in scale mean no data available or not applicable

INDICATOR
RANK

| ← Rank on Main Scale | Indicators |
|------------------------|---|
| ← Country Rank | |
| 49 | Surplus arable land into soil banks. Staple food production excessive |
| 48 | Modern consumer credit available to rural population |
| 47 | Total employment in agriculture is declining |
| 46 | Plastics and resins are domestically produced |
| 45 | Population growth is declining and under 2.5% |
| 44 | Population control effective nationally |
| 43 | Medical doctors are available in rural areas |
| 42 | Higher education is accessible to the rural population |
| 41 | Newspaper print production present |
| 40 | Quantity of technical training (excluding teachers) is not a serious development constraint |
| 39 | Population controls started in urban areas indicate beginning of effectiveness |
| 38 | Non-cellulose discontinuous fibers production present |
| 37 | Aluminum production present |
| 36 | Modern land classification achieved |
| 35 | At least small motorized mechanization significant in staple crop production |
| 34 | Modern production credit available to minifundia operators |
| 33 | Industrial exports sufficient to pay for food deficits |
| 32 | Industrial exports sufficient to support imports of modern agricultural inputs |
| 31 | Per capita food production increased at least 10% (56-65) |
| 30 | Acetate and Rayon discontinuous fibers production present |
| 29 | Electricity is available in at least the majority of villages |
| 28 | Agricultural research and technology distribution effective (public or private) |
| 27 | Land development by modern mechanized methods |
| 26 | Industrial production absorbs surplus agricultural labour |
| 25 | Chemical fertilizers used significantly in staple crop production |
| 24 | Teacher training is adequate in quantity |
| 23 | Chemical pest control used significantly in staple crop production |
| 22 | Production inputs distribution system effective in rural areas (public or private) |
| 21 | Television receiver production present |
| 20 | Tyre production present |
| 19 | Radio receiver production present |
| 18 | Commercial nitrogenous fertilizer production present |
| 17 | Crude steel production present |
| 16 | Paper production present |
| 15 | Modern irrigation systems adequately utilized and maintained |
| 14 | Modern medicines and nurse-level advice available in rural areas |
| 13 | At least primary education accessible to majority of rural population |
| 12 | Consumer goods distribution system present in rural areas |
| 11 | At least most provincial centres connected by all-weather roads |
| 10 | At least non-capital goods industry present for agricultural inputs and consumer goods |
| 9 | Electricity is available in the majority of municipal towns |
| 8 | Medical doctors are present in urban areas |
| 7 | Most villages are accessible by motor transportation |
| 6 | Seasonal unemployment is or has been high in staple crop production |
| 5 | At least hand and artisan industry present for agricultural inputs and consumer goods |
| 4 | At least animal drawn implements are used in staple crop production |
| 3 | Land development (irrigated etc.) is or has been done by hand labour tools only |
| 2 | At least hand tools are used in staple crop production |
| 1 | Shifting agriculture or equivalent seminomadic agricultural practices have been present |
| Deviations per Country | |